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Slovenian nurses' research utilization competence and received support from nurse managers

Kompetencje słoweńskich pielęgniarek w zakresie wykorzystywania badań i wsparcie otrzymywane od pielęgniarek oddziałowych

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STRESZCZENIE

KOMPETENCJE SŁOWEŃSKICH PIELĘGNIAREK W ZAKRESIE WYKORZYSTYWANIA BADAŃ I WSPARCIE OTRZYMYWANE OD PIELĘGNIAREK ODDZIAŁOWYCH

Wprowadzenie. Wykorzystywanie badań jest podstawą praktyki opartej na dowodach. Pielęgniarki oddziałowe odgrywają ważną rolę we wspieraniu zarządzania kompetencjami i wykorzystywaniu badań w opiece pielęgniarskiej.

Cel. Celem badania było dokonanie analizy kompetencji słoweńskich pielęgniarek pracujących w szpitalach w zakresie wykorzystywania badań oraz wsparcia otrzymywanego od pielęgniarek oddziałowych w odniesieniu do tego tematu. Na kompetencje w zakresie wykorzystywania badań składają się: podejście, wiedza oraz umiejętności.

Metody. Zastosowana została opisowa, przekrojowa metoda badań. Uczestnikami były pielęgniarki (n=154) z ośmiu szpitali w Słowenii. Dane zostały zebrane za pomocą narzędzia Kompetencje w Wykorzystywaniu Badań (*Competence in Research Utilization*) i poddane analizie statystycznej.

Wyniki. Podejście pielęgniarek było pozytywne. W większym stopniu doceniały one wykorzystywanie badań niż były gotowe do zaangażowania się w wykorzystywanie badań. Ich wiedza związana z pozyskiwaniem dowodów badań, czytaniem oraz oceną badań była raczej ograniczona, nawet jeśli oceniały swoje umiejętności jako ponadprzeciętne. Otrzymywane wsparcie od pielęgniarek oddziałowych umiarkowanie wpływało na kompetencje pielęgniarek w zakresie wykorzystywania badań.

Wnioski. Zalecane jest wzmocnienie kompetencji pielęgniarek w zakresie wykorzystywania badań poprzez systematyczne zarządzanie kompetencjami oraz wsparcie ze strony oddziałowych w praktyce klinicznej. Oddziałowe mogą wspierać kompetencje pielęgniarek w zakresie wykorzystywania badań poprzez zachęcanie ich do edukacji oraz kontynuacji podjętego kształcenia, a także poprzez budowanie stałej współpracy akademickiej i tworzenie sieci kontaktów między nauczycielami, badaczami i pielęgniarkami.

Słowa kluczowe: **kompetencje, praktyka oparta na dowodach, pielęgniarstwo, wykorzystanie badań, wsparcie**

ABSTRACT

SLOVENIAN NURSES' RESEARCH UTILIZATION COMPETENCE AND RECEIVED SUPPORT FROM NURSE MANAGERS

Introduction. Research utilization is the core of evidence-based practice. Nurse managers have an important role to support competence management and research utilization in nursing care.

Aim. The aim of the study was to investigate the research utilization competence of Slovenian nurses working in hospitals and the received support from nurse managers related to research utilization. Research utilization competence comprises attitudes and the knowledge and skills.

Methods. A descriptive, cross-sectional study design was used. The participants were nurses (n=154) from eight hospitals in Slovenia. Data was collected using the Competence in Research Utilization instrument and analyzed statistically.

Results. Nurses' attitudes were positive. Nurses' appreciation of research utilization was higher than their readiness to commit themselves to research utilization. Nurses' knowledge related to acquisition research evidence and reading and appraising research was rather limited even if they assessed their skills as above moderate. The received support from nurse managers related moderately to nurses' research utilization skills.

Conclusions. The research utilization competence of nurses is recommended to be strengthened with systematic competence management and support from nurse managers in clinical practice. Nurse managers can support nurses' research utilization competence by encouraging them to participate in continuing education and by building systematic academic cooperation and networking between educators, researchers, and nurse clinicians.

Key words: **competence, evidence-based practice, nursing, research utilization, support**

INTRODUCTION

Implementing evidence-based practice (EBP) in clinical care by providing the best and up-to-date research-based care practices improves patient care and outcomes, reduces costs, and increases nurses' job satisfaction [1]. In EBP, the best research evidence is integrated with clinical expertise and patient values. Nurse managers are responsible for building evidence-based operations and developing research activities [2]. This study focuses on Slovenian nurses' research utilization (RU) and EBP. As EBP is a relatively new subject in nursing education in Slovenia, it is still insufficiently integrated into curricula [3] and in patient care [4]. In Slovenia, and more widely, there is a need for information regarding the RU competence of nurses working in hospitals and the support related to RU received from nurse managers.

RU is the core component of EBP [5]. The focus of this study is on RU to gain a more in-depth view of the use of an essential type of evidence than could be obtained with a broader perspective including multiple forms of evidence. RU can be understood as an outcome – the use of research results in nursing action and decision-making – or a process [6]. Here, RU is defined as a process including the identification, acquisition, critical reading (including assessment) and implementation of research knowledge [7,8]. When speaking of RU competence, it comprises the attitudes towards and the knowledge and skills needed in RU [8,9]. A combination of all competence components is needed to achieve the behavioral changes required for RU [1].

Nurse managers working at middle management and strategic level have an essential role in the implementation of research-based practices and in competence management of nurses [2,10,11] by finding out the areas that need improvement, creating a ward culture favorable to research, allocating time to investigating literature, and by supporting relevant training for nurses [2,12]. Nurse managers can support nurses' successful implementation of evidence-based innovation by enabling collaboration and academic partnership between nurse researchers, teachers and nurse clinicians in clinical practice, which includes shared training and bringing research skills to nursing intervention development projects [13,14]. However, a lack of support by nurse managers has also been found [15].

The attitudes of nurses towards RU are mainly positive [9,15,16]. If nurses have positive attitudes and strong beliefs about the importance of EBP and RU, they are more likely to commit and implement research into patient care [2,12]. Nurses' RU knowledge and skills range between low and moderate [9,13]. The deficiencies in RU are related to the formulation of questions according to clinical problems, and the acquisition, reading and assessment of research knowledge [9,15,17].

Continuing education [9,16,17] and supervisory position [9] associate with a positive attitude towards RU and better RU knowledge and skills. Moreover, the support of nurse managers has a positive impact on nurses' attitudes towards the use of research in nursing practice and on developing nurses' competence [2,12].

In the previous studies, the concepts, questions, research settings and indicators regarding RU differed from each other, so a direct comparison of the results is mostly impossible. Although there are diverse procedures to assess EBP and RU competence, typically only a single competence component (attitudes, knowledge or skills) has been assessed [5]. Moreover, there are only few studies concerning the nurse managers' role and support related to nurses' RU competence [18]; this study fills the research gap.

METHODS

The aim of this study was to investigate the RU competence of Slovenian nurses working in hospitals and the support received from nurse managers related to RU. This study used a descriptive, cross-sectional study design. The study is part of a larger international study project relating to RU competence and received support among nursing students and nurses in three European countries (Finland, Poland and Slovenia) during 2012-2021.

In Slovenia, data was collected in April-May 2017 with a structured paper questionnaire. All twelve hospitals having broad medical care specialties (10 general hospitals and 2 clinical centers) were invited to the study; research permission was granted by eight. Altogether 400 nurses were invited to participate using the following eligibility criteria: working in a surgical or internal medicine ward, having the title of nurse, deputy nurse manager or nurse manager working in middle management position at the ward, having permanent employment, working as permanent substitute, or employed for more than one month (e.g. as substitute). Altogether 158 nurses and nurse managers (later: nurses) agreed to participate. Finally, 154 questionnaires were included, giving a response rate of 38.5%.

The Competence in Research Utilization (CompRU) instrument [8,19,20] was used for the data collection. The English version of the instrument was translated into Slovenian using a forward/back-translation process. The CompRU instrument included 63 items within three sections: Nurses' attitudes to RU (16 items) and RU skills (16 items) were measured using a five-point Likert scale, while nurses' RU knowledge was assessed by a knowledge test (31 items), scored by allocating one point for each correct answer. The results were classified in four grade categories: excellent (26-31 points), good (19-25), satisfactory (11-18) and weak (0-10). The instrument also included eight demographic variables and three items to measure received support from nurse managers related to RU with a five-point Likert scale.

The CompRU instrument's content validity has been evaluated as good [19]. The construct validity of the instrument was measured using principal component analysis, explaining 50% (attitudes to RU) and 70% (RU skills) of the variance of the data, indicating support for the theoretically formed categories. Cronbach's alpha coefficient for the Attitudes to RU scale is 0.84 and for the RU Skills scale 0.94.

Ethical principles were followed throughout the study. The study protocol was approved by the Ethics Committee of the University of with the word Turku (reg. no. 28/2014). In addition, research permissions were obtained from the participating hospitals. Permission to use and translate the CompRU instrument was obtained from

its developer and copyright holder. All participants gave informed consent. Data was collected anonymously.

Analysis was performed by using SPSS 26 software. The characteristics of the sample were reported using descriptive statistics (frequencies, percentages, mean values, standard deviation). Sum variables based on the structure of the instrument were formed. These were obtained by adding up the coded answers and dividing the calculated sum by the number of variables. Knowledge sum variables were reported using percentages and scores of right answers. The reliability of sum variables was checked by calculating Cronbach's alpha coefficients and by examining, through item analysis, the compatibility of single questions within the scale. Construct validity of Attitudes to RU scale and RU Skills scale was evaluated using Principal Component Analyses with Promax rotation. The sample size was large enough (Central limit theorem) to use parametric tests without concerns of normality assumptions. Pearson correlation coefficients were used to evaluate dependencies between sum variables. Comparisons between mean values of sum variables were done using paired t-tests with Bonferroni corrections. Multifactor Analysis of Variance was used to find effects of background factors on sum variables (Main effect model: continuous variables used as covariates and categorical variables used as fixed factors). Sidak adjustments for multiple comparisons were used for pairwise comparisons. Statistical test was considered to be significant at p-value ≤0.05.

RESULTS

Altogether 154 nurses participated in this study, including 130 (87.2%) with the job title of nurse and 19 (12.8%) working as deputy nurse manager or nurse manager. Nurses' mean age was 37.9 years (SD 8.5) with a range of 20-58 years, and 85.7% were women. (Tab. 1.)

Tab. 1. Characteristics of sample

Characteristics	Nurses				
	n	%	Mean	SD	Range
Age (years)	150		38.0	8.5	20-58
Gender	154				
Female	*132*	*85.7*			
Male	*22*	*14.3*			
Highest completed degree	146				
Post-secondary qualification	*121*	*82.9*			
Bachelor or Master degree	*25*	*17.1*			
Current job title	149				
Nurse	*130*	*87.2*			
Deputy nurse manager or nurse manager	*19*	*12.8*			
The length of working experience					
in health care sector (years)	153		14.4	9.2	0.1-36.2
<10 year	*47*	*30.7*			
10-<20 years	*60*	*39.2*			
20 years or over	*46*	*30.1*			
Field of nursing, where working	148				
Medical nursing	*63*	*42.6*			
Surgical nursing	*85*	*57.4*			
Length of working at the ward at the time of answering the questionnaire	152		11.5	8.3	0.1-32.2
<10 year	*67*	*44.1*			
10-< 20 years	*59*	*38.8*			
20 years or over	*26*	*17.1*			
Participation in the further education related to research utilization after graduation	149				
Yes	*21*	*14.1*			
No	*128*	*85.9*			

Legend: n – number, % – percentage, SD – Standard Deviation

Nurses' competence in RU

Nurses' RU competence was measured with 63 items within three sections: Attitudes to RU, Knowledge related to RU, and Skills related to RU.

Nurses' attitudes to RU were measured with 16 items divided into two categories: Appreciation of RU and Commitment to RU. Nurses' attitudes to RU were positive (mean 3.8, SD 0.53). However, nurses' appreciation of RU was higher (mean 4.0, SD 0.63) than their readiness to commit themselves to RU (mean 3.6, SD 0.53, p<0.001) (Tab. 2.).

Nurses' knowledge of RU was assessed by a knowledge test including 31 items divided into three categories. The knowledge test revealed limited knowledge of RU. Of the nurses, 27.2% (SD 17.43) answered the test questions correctly (mean score 7.1 and range 0-24). Nurses scored highest in Assessment criteria for research (mean 36.4%, SD 26.47)

Tab. 2. Nurses' attitudes, skills and received support related to research utilization

Sections Categories (I-III) Items (1-3)	Number of items	Mean	SD	Range	n
Attitudes to research utilization†	16	3.83	0.53	2.0-4.9	154
I Appreciation of research utilization	7	4.00	0.63	1.86-5.0	154
II Commitment to research utilization	9	3.62	0.53	2.0-4.75	154
Skills related to research utilization‡	16	3.43	0.64	1.94-5.0	154
I Acquisition of research knowledge	4	3.63	0.69	2-0-5.0	154
II Critical reading of research	8	3.28	0.68	1.0-5.0	154
III Application of research	4	3.50	0.75	1.0-5.0	154
Received support from nurse managers related to research utilization†	3	3.13	1.03	1-5	134
1. My supervisor has encouraged me to participate in training that promotes the research utilization.		3.72	1.07	1-5	134
2. Ideas of new working and nursing methods based on research knowledge have been created and developed on my ward in cooperation with researchers.		2.98	1.22	1-5	134
3. On my ward training that promotes the research utilization has been implemented in cooperation with teachers and researchers.		2.70	1.26	1-5	134

Legend: n – number, SD – Standard deviation
† 5-point Likert scale: 1=disagree completely, 2=disagree partially, 3=neither agree or disagree, 4=agree partially, 5=agree completely;
‡ 5-point Likert scale: 1=very poor, 2=rather poor, 3=neither well nor poorly (moderately), 4=rather well, 5=very well

■ Tab. 3. Nurses' research utilization knowledge

Section Categories (I-III) Sub-categories	Number of items	Correct answers					n
		%	Mean score	SD	Median score	Range score	
Knowledge related to research utilization†	**31**	**27.2**	**7.1**	**5.3**	**6.0**	**0-24**	**154**
I The acquisition of research knowledge	4	23.5	0.9	1.0	1.0	0-4	153
Information sources	2	19.3	0.4	0.6	0.0	0-2	153
Methods of information acquisition	2	28.0	0.6	0.7	0.0	0-2	148
II The process of producing research	23	29.8	5.7	3.9	5.0	0-19	135
Structure of research articles	4	42.8	1.7	1.2	2.0	0-4	129
Research terminology	8	22.6	1.7	1.8	1.0	0-8	117
Research approaches	3	28.8	0.8	0.8	1.0	0-3	124
Data collection methods	3	22.7	0.7	0.8	0.0	0-3	125
Data analysis methods	5	29.2	1.4	1.3	1.0	0-5	120
III The assessment criteria for research	4	36.4	1.4	1.1	2.0	0-4	124
Reliability	3	35.2	1.0	0.8	1.0	0-3	123
Clinical relevance	1	41.3	0.4	0.5	0.0	0-1	121

Legend: % – percentage, SD – Standard deviation, n – number
† Knowledge test scoring: one point for a right answer

and lowest in Acquisition of research knowledge (mean 25.5%, SD 25.84) (Tab. 3.). Statistically significant differences were found between Assessment criteria for research and Acquisition of research knowledge (p=0.003), and Process of producing research as well (p<0.003). Of the nurses, 26.6% had satisfactory and 72.7% weak knowledge of RU based on grade classification (Tab. 4).

Sixteen items divided into three categories were used to measure nurses' RU skills. Nurses assessed their RU skills as above moderate (mean 3.4, SD 0.64). Nurses assessed their skills to be better in Acquisition of research knowledge (mean 3.6, SD 0.69) than in Application of research (mean 3.5, SD 0.75, p=0.042) and in Critical reading of research (mean 3.3, SD 0.68, p<0.003) (Table 2.).

■ Tab. 4. Research utilization knowledge among nurses (n=154) as classified to four grade categories

Grade category (scores†)	f	%
Excellent (26-31)	–	–
Good (19-25)	1	0.6
Satisfactory (11-18)	41	26.6
Weak (0-10)	112	72.7

Legend: f – frequency, % – percentage
† Knowledge test scoring: one point for a right answer (max. 31)

■ Tab. 6. Nurses' research utilization competence in relation to the background variables

Background variable	Attitudes to RU		RU knowledge		RU skills	
	Mean (SD)	p-value	Mean (SD) (Correct answers %)	p-value	Mean (SD)	p-value
Gender		p=0.955		p=0.439		p=0.179
Female	3.85 (0.54)		26.59 (17.31)		3.41 (0.64)	
Male	3.73 (0.49)		30.86 (18.14)		3.52 (0.62)	
Highest completed degree		p=0.376		p=0.694		p=0.574
Post-secondary qualification	3.82 (0.52)		26.96 (17,53)		3.43 (0.61)	
Bachelor or master degree	3.75 (0.61)		29.45 (17,81)		3.59 (0.76)	
Current job title		p=0.767		p=0.859		p=0.578
Nurse	3.81 (0.53)		27.69 (17.12)		3.44 (0.60)	
Debuty nurse manager or nurse manager	3.89 (0.53)		26.61 (19.23)		3.43 (0.84)	
The length of working experience in health care sector (years)		p=0.058		p=0.237		p=0.941
<10 years	3.74 (0.59)		26.29 (18.20)		3.62 (0.51)	
10-<20 years	3.82 (0.51)		23.81 (16.31)		3.23 (0.64)	
20 years or over	3.94 (0.49)		31.51 (16.14)		3.48 (0.70)	
Field of nursing, where working		**p=0.032**		p=0.385		p=0.190
Medical nursing	3.69 (0.54)		26.27 (17.50)		3.49 (0.66)	
Surgical nursing	3.95 (0.48)		28.46 (17.45)		3.43 (0.60)	
Length of working at the ward at the time of answering the questionnaire		**p=0.003** (a vs. b)		p=0.533		p=0.191
<10 years (a)	3.75 (0.58)		27.17 (17.78)		3.63 (0.55)	
10-<20 years (b)	3.91 (0.47)		25.53 (16.92)		3.36 (0.70)	
20 years or over	3.87 (0.54)		31.96 (17.38)		3.27 (0.58)	
Participation on the continuing education related to research utilization after graduation		p=0.638		**p=0.001**		p=0.581
Yes	4.00 (0.47)		40.79 (15.92)		3.79 (0.54)	
No	3.81 (0.53)		25.84 (16.54)		3.37 (0.64)	

Legend: SD – Standard Deviation, vs. – versus

Tab. 5. Correlations† regarding nurses' research utilization competence and received support from nurse managers

Sections and categories	Attitudes			Knowledge				Skills				Received support
	1.	1A.	1B.	2.	2A.	2B.	2C.	3.	3A.	3B.	3C.	4.
1. Attitudes	**1.00**											
1A. Appreciation	0.91**	1.00										
1B. Commitment	0.90**	0.64**	1.00									
2. Knowledge	**0.20***	0.17*	0.18*	**1.00**								
2A. Acquisition	0.06	0.08	0.04	0.57**	1.00							
2B. Producing process	0.26**	0.23**	0.22*	0.96**	0.40**	1.00						
2C. Assessment criteria	0.24**	0.22*	0.19*	0.60**	0.22*	0.43**	1.00					
3. Skills	**0.17***	0.24**	0.06	**0.31****	0.23**	0.25**	0.19*	**1.00**				
3A. Acquisition	0.12	0.20*	0.03	0.13	0.13	0.13	0.10	0.85**	1.00			
3B. Critical reading	0.17*	0.23**	0.07	0.23**	0.23**	0.25**	0.22*	0.96**	0.73**	1.00		
3C. Application	0.20*	0.25**	0.08	0.23**	0.23**	0.31**	0.18*	0.88**	0.62**	0.79**	1.00	
4. Received support	**0.14**	0.12	0.14	**0.00**	0.02	-0.01	0.02	**0.41****	0.38**	0.38**	0.36**	**1.00**

Legend: †Pearson correlation coefficient; * significant at the level 0.05; ** significant at the level 0.01

In addition, a statistically significant difference was found between Critical reading of research and Application of research (p<0.003).

Received support from nurse managers related to RU

Altogether 134 nurses (87%) answered three items measuring nurses' received support from nurse managers related to RU. The overall mean was 3.1 (SD 1.03). The highest mean score was found for "supervisor has encouraged nurses to participate in training that promotes research utilization" (mean 3.72, SD 1.07), while the lowest was found for "training that promotes the research utilization has been implemented in cooperation with teachers and researchers" (mean 2.70, SD 1.26) (Tab. 2.).

Correlations within RU competence sections and with received support related to RU

There was a positive, albeit quite low correlation between Attitudes to RU and RU Knowledge (r=0.20, p=0.013) and RU Skills (r=0.17, p=0.34). The relation between Knowledge and Skills was moderate (r=0.31, p<0.001). In addition, Received support from nurse managers correlated positively and moderately with RU Skills (r=0.41) and was statistically strongly significant (p=<0.001) (Tab. 5.).

Connection between background variables and RU competence

Nurses working in surgical nursing (mean 3.9, SD 0.48) had more positive attitudes to RU than nurses working in medical nursing (mean 3.7, SD 0.54, p=0.032). In addition, having 10-20 years' working experience at the ward was connected to more positive attitudes of RU (p=0.003) compared to having less than 10 years' experience. Participation in continuing education after graduation was related to higher RU knowledge (p<0.001) (Tab. 6.).

DISCUSSION

The aim of the study was to investigate the RU competence of Slovenian nurses working in hospitals and the support received from nurse managers related to RU. This study indicated that Slovenian nurses' attitudes to RU are positive, consistently with the previous studies [9,15,16]. The result is encouraging, as positive attitudes and strong beliefs about the importance of RU make nurses more likely to commit to and implement research into patient care [2,12]. In this study, the nurses appreciated RU, but it seems that commitment to RU was perceived to be slightly lower. Also, Bianchi et al. [2] state that nurses are not always ready to prioritize RU in clinical practice. Although no correlations were found in this study between nurses' attitudes to RU and support of nurse managers, previous research indicated that support of nurse managers is crucial for strengthening and maintaining nurses' positive attitudes to RU [11,12] and for engaging nurses [17].

The key RU knowledge and skills areas are related to acquisition research evidence, reading and appraising research, and the implementation of research evidence into practice [8,17]. The results of this study indicate nurses' limited knowledge in the above-mentioned areas, in congruence with previous studies [9,17]. On the other hand, the nurses appraised their own RU skills as above moderate, which is in line with previous research results as well [9]. The results give cause for concern, as performing tasks without knowledge of the reasoning behind them fosters incompetent practice [5].

One explanation for the nurses' limited RU knowledge might be that they had not studied RU comprehensively; in Slovenia, EBP courses were not offered in nursing education until 2004 [3]. Research also indicates insufficient integration of EBP into nursing education curricula [3]. However, educating nurses is one of the top factors facilitating the implementation of research findings into clinical practice [11]. There is also evidence that educational programs might emphasize how to do research rather

than teaching how to use research in practice [16]. If this is true, this focus in teaching creates a gap in practicing nurses' RU knowledge and skills. Hence, it is suggested that RU teaching should be strengthened and harmonized. The guidelines on the standardization of RU teaching in all three cycles of higher nursing education [3] could be developed and disseminated internationally to ensure equal competence and free movement of nurses across Europe.

This study indicates a justified need to target efforts at competence management of nurses working in clinical practice. Nurse managers have an essential role in RU competence management [2] by inspiring, motivating and mentoring nurses to develop their competences. The finding of this study is heartening in that nurse managers have encouraged nurses to participate in training promoting RU. In addition, this and previous [9,17] studies show that participation in continuing training associates with higher RU knowledge. In this study, higher RU knowledge was also positively associated with better RU skills, which is encouraging.

However, the results of this study do not give any information of what kind of continuing training was related to RU knowledge, and more research is therefore needed. Thus, there is evidence that RU competencies can be improved and sustained, for instance, by attending an intensive 5-day educational program, regardless of nurses' prior educational training [16]. Moreover, an EBP model including formal training in RU at hospital level can be an effective and valuable competence management strategy [17]. It is suggested that RU competence is incorporated and continuously assessed as part of the clinical career path and as standard practice for all nursing staff. This could encourage lifelong learning and sustain the RU competence needed in clinical practice and indicate where nurse managers' support is needed.

Based on the findings, training related to RU is mostly enabled outside the hospital, often requiring external and financial resources. It is suggested that collaboration and academic partnership between nurse researchers, teachers and nurse clinicians is strengthened, and shared training and nursing intervention development projects are arranged [13,14]. This could be an effective strategy to support RU and competence development of nursing staff systematically, because in this study, this kind of support from nurse managers correlated positively and statistically significantly with nurses' RU skills. Building an academic partnership often requires support from top management, as nurse managers' autonomy to perform management activities varies [21]. One example of academic partnership can be found in Finland, where almost all professorships in nursing science are bound to a part-time position of nursing director in a hospital or in primary health care. These positions are focused on supporting leadership, management and development activities based on research and evidence-based practice. [22]

The RU competence of nurse managers is paramount, as they play a key role in promoting evidence-based activities and a research culture in their own work units [2,10,11]. In this study, it was noticeable that those respondents working as nurse managers did not rate their own skills as better than the nurses, indicating a need for their continuing education on RU as well. It may be that nurse managers have a more critical view of their own skills than nurses. Also, Bianchi et al. [2] have pointed out nurse managers' need for systematic EBP competence development. Moreover, management competence should be considered a priority since high-quality evidence-based health services cannot exist without skilled nurse managers [21].

Limitations

There are limitations in this study. First, the representativeness of the sample has to be considered. Based on a power analysis (Chi-square test; statistical level of significance 0.05, strength 90% and effect size 0.1), the required sample size was 296. In addition, the response rate was low (38.5%). The results cannot be generalized, but it is proposed that the data gives a view of nurses' attitudes, knowledge and skills and received support regarding RU in Slovenia.

Secondly, the support of nurse managers related to RU was explored with three items and in only one country as a preliminary survey. Because of this restricted focus, it was possible to gain a limited view of the nurse managers' supportive role in RU. More research is needed with a more profound and international focus.

CONCLUSIONS

Although the Slovenian nurses' attitudes to RU were positive, the RU skills cannot be considered sufficient because they are not based on a strong knowledge base. The received support from nurse managers was related to nurses' RU skills, emphasizing the important role of management in development of nurses' RU competence. In nursing education, strengthening the teaching of RU and EBP is recommended. It is suggested that nurse managers target efforts to competence management of nurses working in clinical practice by encouraging them to take part in continuing education related to RU and by building systematic, reciprocal academic cooperation and networking between educators, researchers, and nurse clinicians. This study can inspire and guide nurse managers who are pondering nurses' competence management and how to strengthen RU in nursing care in other countries besides Slovenia as well.

Due to the small number of participants in just one country, the results of this study can only be considered as indicative. Therefore, a systematic, longitudinal and comprehensive assessment of the RU competence of nurses and nurse managers is needed in the future. These assessments could be implemented in international cooperation. Moreover, the support of nurse managers related to RU should be studied with a more profound focus.

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